CLEAN COPY OF AMENDED CLAIMS 4, 40, 42, 44

4. (amended) The hearing amplification device of claim 3 wherein said at least one channel is configured to have its compression threshold initially set to a predetermined quiescent level, and wherein said at least one channel is further configured to adjust said compression threshold such that said compression threshold is in a range of about said predetermined quiescent level to about 20 decibels below an average sound level of at least a portion of said sound signal.

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40. (amended) The device of claim 35 wherein an asymptotic representation of said transfer function TA1 is defined by the general formula:

$$TA=TA(u,A,U,p),$$

wherein for |u| < U:

$$TA(u,A,U,p)=Au$$

wherein for |u| > U

$$TA(u,A,U,p)=\mathrm{sgn}(u)AU\left|\frac{u}{U}\right|^{p}$$

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wherein:

$$TA1=TA1(u,U_C)=TA(u,A(U_C),U_C(Y),p);$$

wherein $U_C(Y)= U_1$ for Y less than U_1 and $U_C(Y) = Y$ for Y greater than or equal to U_1, wherein U_1 represents a quiescent level for said compression threshold, wherein U_C represents an adjusted compression threshold, wherein Y represents a control signal from said controller for controlling said compression threshold, wherein u represents said transducer input, wherein p represents a compression power, and wherein A represents a magnitude of gain, wherein for Y less than U_1:

$$A=G_1$$

and wherein for Y greater than or equal to U_1:

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$$A = G_1 \left| \frac{U_1}{U_C} \right|^{1-p}$$

wherein G_1 represents the magnitude of a quiescent gain.

42. (amended) The device of claim 41 wherein an asymptotic representation of said transfer function is defined as a cascade of two functions TA1 and TA2, wherein both TA1 and TA2 are defined by the general formula:

$$TA=TA(u,A,U,p),$$

wherein for |u| < U:

$$TA(u,A,U,p) = Au$$

wherein for |u| > U

$$TA(u,A,U,p) = \mathrm{sgn}(u) AU \left| \frac{u}{U} \right|^{p}$$

wherein:

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$$TA1=TA1(u,U_C)=TA(u,A(U_C),U_C(Y),p);$$

wherein $U_C(Y) = U_1$ for Y less than U_1, $U_C(Y) = Y$ for Y greater than or equal to U_1 and less than or equal to U_2, and $U_C(Y)=U_2$ for Y greater than U_2, wherein U_1 represents a quiescent level for said compression threshold, wherein U_2 represents said decompression threshold, wherein U_C represents an adjusted compression threshold, wherein Y represents a control signal from said controller for controlling said compression threshold, wherein u represents said transducer input, wherein p represents a compression power, and wherein A represents a magnitude of gain, wherein for Y less than U_1:

$$A = G_1$$

and wherein for Y greater than or equal to U_1:

$$A = G_1 \left| \frac{U_1}{U_C} \right|^{1-p}$$

wherein G_1 represents the magnitude of a quiescent gain; and

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wherein for TA2=TA2(u)=TA(u,1,U_2,p_2), wherein u represents TA1, wherein U_2 represents said decompression threshold, and wherein p_2 represents 1/p.

44. (amended) The device of claim 43 wherein an asymptotic representation of said transfer function is defined as a cascade of three functions TA1, TA2, and TA3, wherein TA1 , TA2, and TA3 are each defined by the general formula:

TA=TA(u,A,U,p),

wherein for |u| < U:

$$TA(u,A,U,p) = Au$$

wherein for |u| > U

$$TA(u,A,U,p) = \mathrm{sgn}(u)AU\left|\frac{u}{U}\right|^{p}$$

wherein:

TA1=TA1(u,U_C)=TA(u,A(U_C),U_C(Y),p_1);

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wherein U_C(Y)= U_1 for Y less than U_1, U_C(Y) = Y for Y greater than or equal to U_1 and less than or equal to U_2, and U_C(Y)=U_2 for Y greater than U_2, wherein U_1 represents a quiescent level for said compression threshold, wherein U_2 represents said decompression threshold, wherein U_C represents an adjusted compression threshold, wherein Y represents a control signal from said controller for controlling said compression threshold, wherein u represents said transducer input, wherein p_1 represents a first compression power, and wherein A represents a magnitude of gain, wherein for Y less than U_1:

$$A = G_1$$

and wherein for Y greater than or equal to U_1:

$$A = G_1\left|\frac{U_1}{U_C}\right|^{1-p}$$

wherein G_1 represents the magnitude of a quiescent gain;

wherein for TA2=TA2(u)=TA(u,1,U_2,p_2), wherein u represents TA1 or TA3, wherein U_2 represents said decompression threshold, and wherein p_2 represents $1/p_1$; and

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wherein for TA3=TA3(u)=TA(u,1,U_3,p_3), u represents TA1 or TA2, wherein U_3 represents said attenuation threshold, and wherein p_3 represents a second compression power.